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No. 8

A NEW PHORORHACOID BIRD FROM THE
DESEADO FORMATION OF PATAGONIA

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RESULTS OF THE MARSHALL FIELD PALEONTOLOGICAL EXPEDITIONS
TO ARGENTINA AND BOLIVIA, 1922-27

The Marshall Field Paleontological Expeditions, under the leadership of Mr. Elmer S. Riggs, brought together one of the finest collections of phororhacoid birds that has yet been made. The collection is outstanding both for the excellence of certain individual specimens, those representing the Pliocene genera *Mesembriornis* and *Procariama* being especially noteworthy, and for its coverage of the group as a whole. Material from nearly all horizons in which these birds are known is included.

It has been my great good fortune to be entrusted by Mr. Riggs with the study of this collection, a privilege for which I am exceedingly grateful. In the course of the work on it I have been able, through the courtesy of numerous institutions and individuals, to examine virtually all phororhacoid material except that contained in the South American museums. Even this deficiency has been to some extent overcome through the kindness of Dr. Martín Doello-Jurado and Professor Alejandro F. Bordas, who have sent casts of several specimens in the Museo Argentino de Ciencias Naturales. A large manuscript has been prepared, but publication has unfortunately been delayed by the war. The authorities of the British Museum (Natural History) had courteously arranged to send a number of casts and photographs of type and unfigured specimens in the Ameghino Collection but the preparation of these is impossible under present conditions. Without them the work can hardly be

completed satisfactorily. Under the circumstances, therefore, it has been decided to publish certain preliminary papers of which the present, devoted to the only new form obtained by the Marshall Field Expeditions, is the first.

Acknowledgments and sources of material will be detailed in the final publication, but I must mention here my indebtedness to the American Association of Museums, whose award of a Carnegie Corporation Grant-in-Aid for Travel made it possible for me to examine the Ameghino Collection in the British Museum (Natural History) and the specimens preserved in the Muséum Nationale d'Histoire Naturelle. The drawing in this paper is by Mr. John Conrad Hansen.

Order **Gruiformes**
Suborder **Cariamae**
Superfamily **Phororhacoidea**
Family **Phororhacidae**

Andrewsornis¹ gen. nov.

Type species.—*A. abbotti* sp. nov.

Distribution.—Late mid or early late Oligocene, Patagonia.

Diagnosis.—Generally similar to *Phororhacos* in the known parts, differing as follows: Skull slightly shallower, antorbital vacuity with more oblique anterior rim, palatine plate not descending as far below tomium. Mandible more slender with rather shorter symphysis and larger, more oval vacuity, small opening present behind vacuity. Coracoid with much larger procoracoidal process and deeper medial groove. Ungual phalanx of digit II proportionately larger.

Andrewsornis abbotti² sp. nov.

Type.—F.M. No. P13417, incomplete skull, mandibles, proximal portion of coracoid, second and ungual phalanges of digit II. Collected by John B. Abbott, September 18, 1923.

Horizon and locality.—Deseado formation, Cabeza Blanca, Chubut, Argentina.

Diagnosis.—As for the genus, for measurements see below.

¹ Named for the late Charles W. Andrews in tribute to the excellence of his work on fossil birds in general and on the phororhacoids in particular.

² Named for the late John Bernard Abbott, veteran collector and preparator, to whose instruction in the practical aspects of paleontology I owe much.

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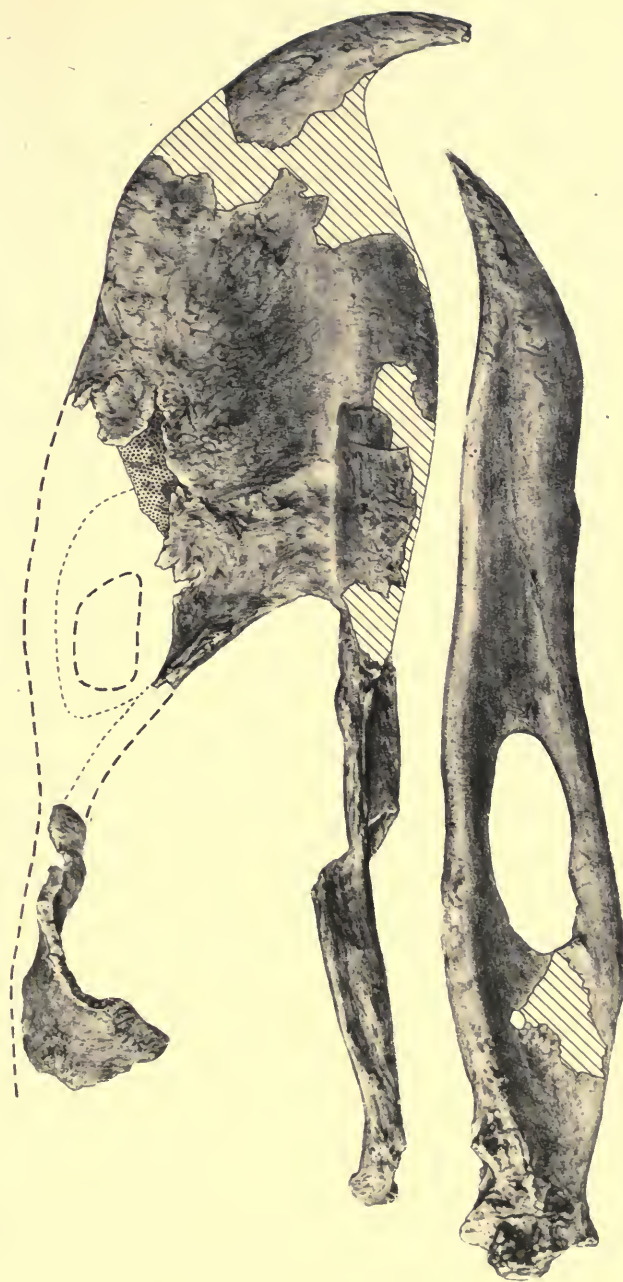


FIG. 16. *Andrewsornis abbotti* gen. et sp. nov. F.M. No. P13417. $\times 2/5$.

Andrewsornis is the first member of the Phororhacidae¹ to be recorded from the Deseado, the other supposed members of the family found in this horizon having been erroneously referred (see below). The characters distinguishing it from *Phororhacos* are few and of about the same order of magnitude as those separating the latter from the Pliocene *Mesembriornis*; the three genera could well be members of a single phylum. The small opening behind the main vacuity of the mandible of *Andrewsornis* may be homologous with the posterior vacuity of the Psilopteridae. The oblique anterior rim of the antorbital vacuity and the relatively shallow palatine plate are definite approaches to this family. Apart from these rather slight exceptions, however, the characters of *Andrewsornis* are overwhelmingly those of the Phororhacidae. In fact, broadly speaking, it is almost as specialized a form as *Mesembriornis*, the latest known member of the family. The contemporary forms belonging to the Psilopteridae and Brontornithidae are equally as specialized, a fact which indicates that the radiation of the group began long prior to Deseado time.

The recording of the new genus and species demands a brief review of the described Deseado members of the superfamily. These are: *Physornis fortis* Ameghino (1895, pp. 576-577), *Smiliornis penetrans* Ameghino, *Phororhacos affinis* Ameghino, *Aucornis euryrhyncus* Ameghino and *A. solidus* Ameghino (1899, p. 9).²

Physornis fortis was based on what Ameghino considered to be a fragment of a mandible. Before going to London I suspected that *A. abbotti* would prove to belong to this form. An examination of the type specimen, however, showed that it is an unrecognizable fragment, quite possibly not even avian. It could equally well be a scrap from the iliac crest of a large ungulate such as *Parastrapotherium* or *Pyrotherium*. The genus and species must accordingly be rejected as indeterminate.³

Smiliornis penetrans is based on the proximal end of a coracoid. It is valid and referable to the Psilopteridae.

¹ As will be discussed in a later paper, I believe that there are three families of the group, the Phororhacidae, the Psilopteridae (*Pelecornis* Ameghino is a synonym of *Psilopterus* Moreno and Mercerat) and the Brontornithidae.

² The forms described in 1899 were recorded as coming from the "Formación Guaranítico," an obsolete term covering Deseado and earlier formations. I am certain, however, that they are all from the Deseado. Casts of the type specimens of "*Phororhacos*" *affinis* and *Aucornis euryrhyncus* agree perfectly with specimens from this horizon in the Amherst College and Field Museum collections.

³ At the British Museum I discussed this specimen with several persons who were well qualified to judge. Their opinions coincided with mine.

Phororhacos affinis is based on the proximal and distal ends of a relatively small tarso-metatarsus. It is not a member of the genus *Phororhacos* but is a psilopterid.¹ Although there are no comparable parts, I believe that the course least liable to cause future confusion is to place "*P.*" *affinis* provisionally in the synonymy of *S. penetrans*.

Aucornis is a typical brontornithid, close to and probably ancestral to *Rostrornis* of the Santa Cruz.

The only other author who has described Deseado birds is Loomis (1914, pp. 225-232).² He referred three specimens to "*Physornis fortis*," and described a number of others under Ameghino's *Loxornis clivus*, which he believed to be a close relative of *Psilopterus*. Of the material referred to "*Physornis*," the femur (fig. 149) is certainly referable to *Aucornis*, probably to *A. euryrhyncus*. The figured phalanx (fig. 150) is that of a litoptern, as already noted by Kraglievich (1932, p. 333), possibly *Coniopternium*. The other phalanx mentioned by Loomis (p. 228) is the distal end of the second of digit III of a phororhacid, very probably *Andrewsornis abbotti*. The material referred to *Loxornis* is a heterogeneous assemblage belonging to several orders. In the first place the genus *Loxornis* is probably, as Ameghino suspected (1895, p. 97), a member of the Anseriformes, and none of the specimens described appear to belong to this order. In the second, not all of them are phororhacoids, but only those depicted in figs. 155-158 which are referable to *Smiliornis penetrans*. The humerus (fig. 152), sternum (fig. 153), and coracoid (fig. 154) definitely do not belong to this group. The claw shown in fig. 159 appears to be from an edentate mammal.

MEASUREMENTS

(In millimeters)

Skull.....	{	Depth of beak at mid point.....	115.0
		Length of beak to antero-ventral corner of antorbital vacuity.....	194.0
		Length from antero-ventral corner of antorbital vacuity to posterior extremity of quadrato-jugal.....	205.0
Mandible.....	{	Length.....	394.0
		Length of symphysis.....	99.8
		Depth of ramus at coracoid process.....	65.3
Coracoid.....	{	A-p. diam. of proximal end.....	31.0
		Tr. diam. of proximal end.....	35.7
Second phalanx of digit II, length, measured from centers of articular faces			30.3
Ungual phalanx of digit II, length from center of articular face to tip.....			58.4

¹ This is also true of the small Santacruzian forms described by Ameghino as *Phororhacos modicus* and *P. delicatus*. These are referable to *Psilopterus*, and doubtfully separable from *P. australis*.

² He overlooked Ameghino's paper of 1899, as did Lambrecht (1933).

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